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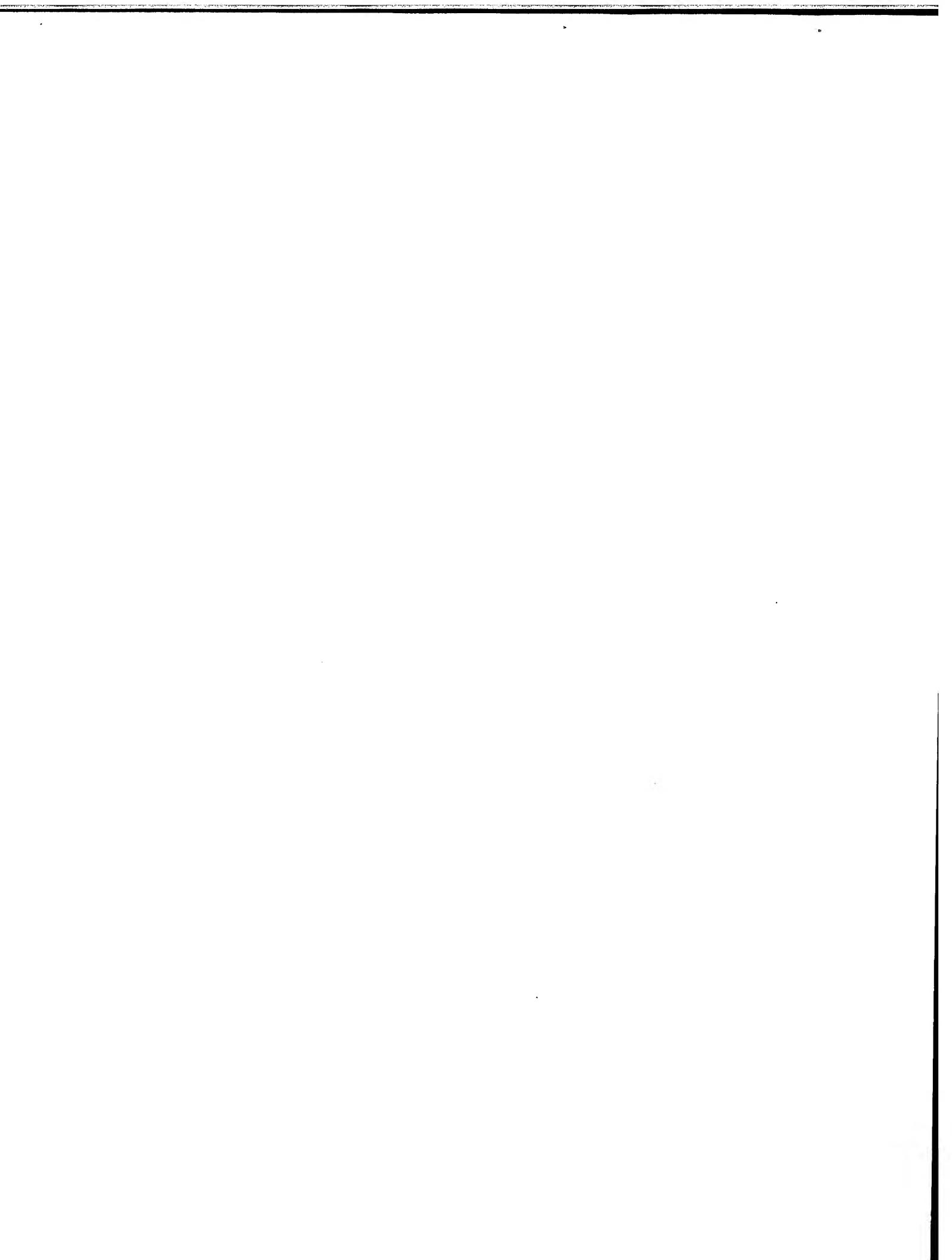
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04077431.7

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System for handling electronic mail in a multiple user environment

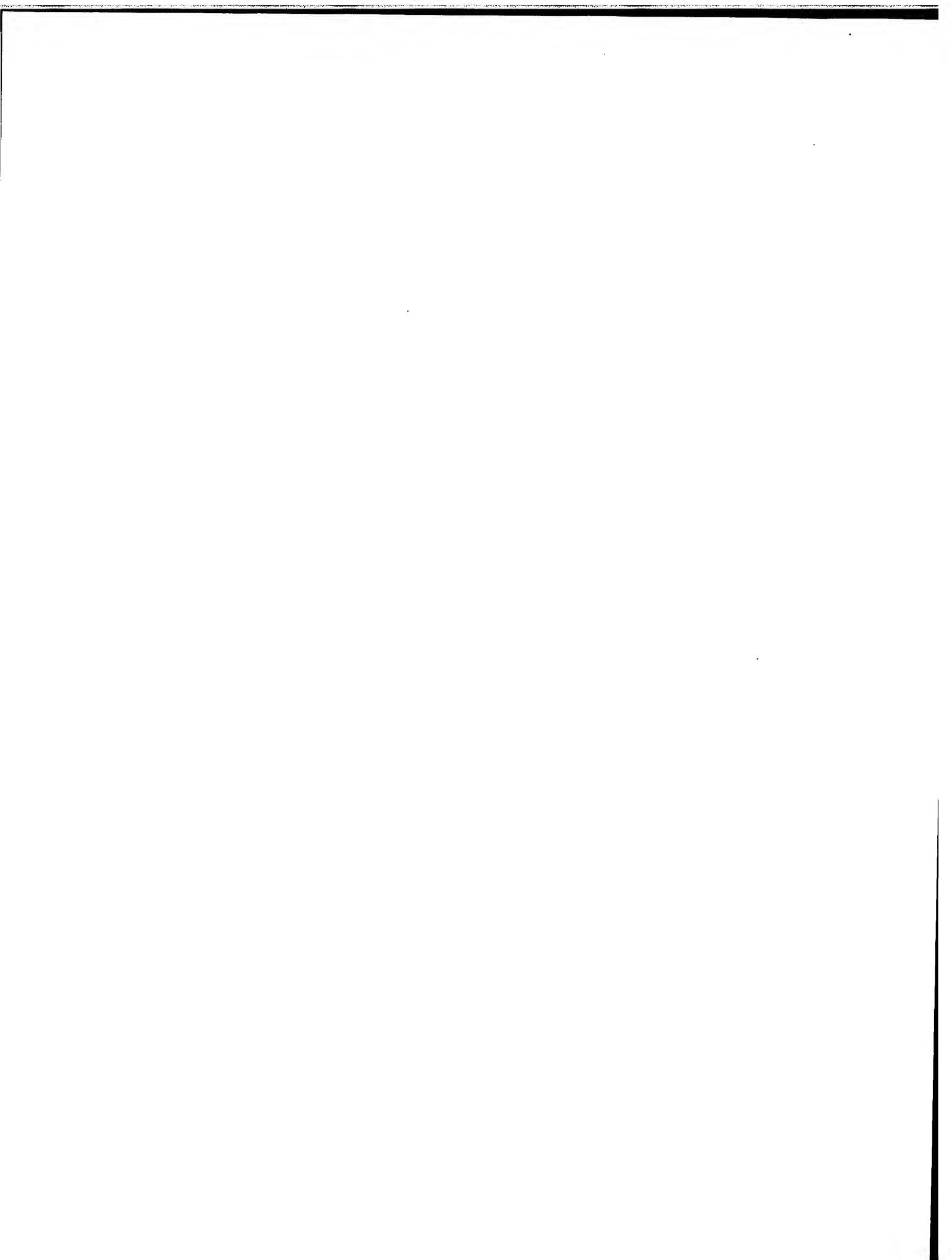
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SYSTEM FOR HANDLING ELECTRONIC MAIL IN A MULTIPLE USER ENVIRONMENT

The present invention relates to a system and a method for handling electronic mail in a multiple user environment. Moreover, the invention relates to a computer-readable medium for implementing such system on a computer network.

In the recent decade, communication by electronic mail (e-mail) has been ever increasing. To an ever increasing extend, this e-mail correspondence is replacing the normal postal mail correspondence, not only personal private correspondence but also business related information is increasingly being exchanged via e-mail. Recent surveys show that as much as 60% of business related information and documents in a business office are distributed and stored as e-mails.

In many offices, an electronic mail system is installed in the computer network of the office and the members of staff are provided with their individual e-mail address and associated mailbox with which the individual persons send and receive their e-mails irrespective of the nature of the mail content.

In such an e-mail system, e-mails are sent and received via a mail server, which directs incoming mail to the mailbox of the registered user to whom the mail is sent. Thus, the mails are stored in the mailbox (database) of the dedicated users (recipients). The individual users are responsible for the storage and journalising of the received e-mails, since the users have no access to the mailboxes of the other users, i.e. the colleagues. Much of the information communicated via e-mail is documentation, appointments, meeting schedules with colleagues and customers. Since e-mails containing such information can be accessed by the recipient only, this requires that the users must actively store and share his information so that the information is assessable for the organisation, so that customer information and vital business documents and information are shared across the organisation. Otherwise there is a considerable risk that vital information is lost which may have an adverse

effect on the business. This risk is particularly present, if a member of staff leaves the organisation or if data are stored on a lap top computer which breaks down. Though the data stored at each of the registered users, i.e. the individual members of staff in an organisation, may be retrieved e.g. by an expert user, valuable time may have
5 been lost.

In order to eliminate this risk of loosing information, various procedures may be introduced, however so far no reliable automatic system has been introduced. Therefore, the object of the present invention is to provide an automatic handling
10 system for organising e-mails in a multiple user environment.

This object is achieved by an electronic mail management (EMM) system for handling electronic mail in a multiple user environment, in which the user's incoming electronic mail is sent and received, said system includes a mail
15 distribution network including a server through which electronic mail items of the users are exchanged, said system comprising: detecting means for monitoring the flow of in- and outbound electronic mails for a specified set of users, and intercepting the in- and outbound e-mails; journalising means for creating a notification record of a set of e-mail information data (metadata) for each intercepted
20 electronic mail; an e-mail manager database (EMM DB) for storing at least said notification record and each electronic mail; and means for establishing a journal of e-mails by defining a search request query and submitting said search request to a search engine for selecting a user-defined series of information data from the notification records in the EMM database.

25 By a system according to the invention, an electronic mail system for a multiple user environment is provided where an e-mail database is provided together with a search facility, so that electronic mail items are searchable independent of the server and client. The hitherto known technologies, such as Microsoft Exchange, Lotus Notes
30 and Novell Groupwise, e-mails are received from various data sources, typically the

Internet or the local LAN. The e-mails are delivered to one or more e-mail mailboxes. According to the e-mail management (EMM) system according to the present invention, this mailbox paradigm is no longer existing, since the received and sent e-mails are detected and delivered to the e-mail manager database and are 5 actually not forwarded to the individual users mailboxes. Instead the individual users of the EMM system access the e-mails in the EMM database by performing a number of search queries. These search queries may be predefined as well as ad-hoc.

Although the traditional mailbox paradigm in reality does not exist in the EMM 10 system according to the invention, the individual user may simulate this traditional mailbox by establishing a journal according to a predefined search in the EMM database. For instance, a search for e-mails in which the users own name is present in the data fields "To", "Cc" or "Bcc" of the notification record, the resulting journal is equal to the traditional inbox known in the traditional e-mail systems. Similarly, a 15 "sent items" journal may be established.

However, the unique advantage of the e-mail management system according to the invention is that any type of journal may be established, irrespective of recipients or senders. As it may be appreciated, the EMM system according to the invention 20 allows for an infinite number of ways of retrieving e-mails contrary to the traditional systems that only support one way of retrieving e-mails, i.e. direct delivery to a mailbox.

By the EMM system according to the present invention, the possibilities in the EMM 25 system allows for a completely new mind shape within an organisation, which may improve the output of the organisation, such as customer service, productivity and profit margins, just as cooperation across departments within an organisation may be facilitated.

- For instance, by the EMM system it is possible to establish a journal containing all e-mail correspondence relating to a specific customer, a specific file number, a particular subject, etc. Hereby, users in a multiple user environment are not dependent on each other's presence in the organisation in order to retrieve information, and the risk of failing to get all relevant information concerning a specific activity is eliminated or at least substantially reduced, e.g. because a colleague is on leave, has left the organisation or has not shared the information by forwarding relevant e-mails with all relevant colleagues.
- 10 The difficulties in journalising the mail by the traditional e-mail systems originate from the principle that received and sent e-mail is delivered to the individual mailboxes whereafter the mail is no longer accessible in the "post office" of the mail server. The traditional e-mail post office may be regarded as a routing mechanism rather than a database. This design of the traditional e-mail systems is historically 15 based on a peer-to-peer communication where information typically is exchanged between two individuals. The mailbox idea is a basic design component by the traditional systems, but by the invention it is realised that this basic idea is preventing successful attempts to adapt e-mail systems to IT collaboration systems where information is archived and journalised and made accessible for a multiple of users.
- 20 In an embodiment of the system according to the invention, the detection means include means for formatting each intercepted electronic mail. Moreover, this formatted electronic mail is copied to the e-mail manager database (EMM DB). Hereby, the e-mails are stored in the database in a searchable format.
- 25 Preferably, the EMM database is a relation database, preferably hosted on a SQL server. Hereby, a searchable database structure is provided facilitating the journalising means of the EMM system according to the invention.

The data in the notification record includes a notification message for each e-mail, said notification message is preferably containing e-mail header information data including at least one of the following data:

- time of receipt (date);
- 5 information concerning the sender ("from");
information concerning the recipient(s) ("to");
information regarding copy recipients ("cc");
blind copy recipients ("bcc");
message identification;
- 10 reference data, such as "in reply to";
subject;
comments, and
keywords.
- 15 These "metadata" in the notification message are stored in the EMM database, so that the e-mail to which the notification record is attached is easily identifiable and thereby retrievable.

Preferably, the EMM is adapted to cooperate with any SMTP protocol based e-mail systems. Hereby, the EMM system according to the invention may be implemented on existing systems as an "add-on" module to a traditional e-mail system.

The specified set of users being subjected to the detection means is preferably all users in the multiple user environment, which may be at least two users. By 25 encompassing all users, i.e. all clients to the server, a comprehensive journalisation of all e-mails may be ensured.

It is realised that the multiple-user environment may be a multi-site customer environment; each site having a local client server or the multiple-user environment 30 may be a single-site customer environment, having a single client server.

Preferably, the means for establishing a journal include an e-mail management dialog means for each user for indicating arrival and departure of e-mails. By this dialog means (toaster) interaction between the user and the EMM system may be conducted and a flag is set for the user indicating an e-mail to be journalised. By the term journalising is meant an operation, where the user is deciding if an e-mail is to be available for a search result or not. The dialog means may provide for seeking the user's consent for journalising for each arriving and departing e-mail. The dialog means may include a notification scheduler having means for updating the journalising means, said updating means include a predefined journalisable acceptance criterion. This journalisable acceptance criterion is either if the specific e-mail is sent to more users, all users must accept the specific e-mail to be journalised; or if only one of the users accepts the specific e-mail for journalising, the journalising is performed.

15

In an alternative embodiment, the dialog means may provide for automatic journalising for each arriving and departing e-mail.

20 In a preferred embodiment of the invention, a multiple of journals may be established, and a combined journal may be established by comparing two or more of said multiple of journals by Boolean operators.

25 The invention also concerns a method of managing e-mails in a multiple-user environment on a system as described in the first aspect of the invention. In a third aspect of the invention, a computer-readable medium containing a computer-readable program code for manipulating computer means for enabling a computer system to perform the method of managing e-mails according to the invention and thereby implementing an EMM system according to the invention on the computer system.

In the following the invention is described with reference a preferred embodiment of the invention and with reference to the accompanying drawings, in which:

- Fig. 1 is a principle drawing of a traditional mail system;
- 5 Fig. 2 is a principle drawing of a mail system according to the invention;
- Fig. 3 is a schematic architectural drawing of an electronic mail management system according to a preferred embodiment of the invention;
- Fig. 4 is a schematic drawing of an electronic mail management system according to a preferred embodiment of the invention; and
- 10 Fig. 5 is a representation of a dataflow for receiving and journalising electronic mail.

As shown in fig. 1, in a traditional mail system in an organisation having a multiple of users, an electronic mail item 10 is received and stored in an allocated storage space 20 of the recipient. The mail is shown in the recipient's inbox 30, where the mail may be read and forwarded (see arrow 40) to other members 31 of the organisation. If the mail item is not forwarded, the other members 31 cannot access the information in the mail.

20 As principally shown in fig. 2, this problem is overcome with a mail handling system according to the invention. As shown in fig. 2, the incoming mail 10 is stored in an electronic mail management database 50 (EMM DB). In this EMM database 50 it is possible to perform a dynamic search 60, whereby the users having access to the computer network in the organisation may gain access to relevant information 25 communicated to any member 32 of the organisation in an electronic mail. A search structure is defined, so that at the workstations in the computer network, the users may define search query and retrieve all e-mails complying with the user-determined criteria defined in this search query.

The search queries may include both sent and received e-mails to/from the mail addresses of the users on the computer network. Detection means (ECA) captures all incoming and outgoing e-mails on the exchange server. A notification record is created including a set of metadata by journalising means (EMP) for each mail. Said 5 notification records are stored in the EMM database.

The EMM (E-Mail Management) application according to the invention monitors the Exchange server in a computer network for incoming and outgoing e-mails for a specified set of users, e.g. all users on the server. The monitored e-mails are stored 10 inside a central database. While performing the save of an e-mail, a notification is also sent to the logged in EMM user's display system indicating the arrival/departure of the e-mail and seeking the user's consent for journalising. Based on the response of the EMM user, the e-mail is journalised. The EMM user's failing to respond to their notification displays within a predefined window may be stored in the work 15 queue in the EMM store. The user can access the work queue through the display and can journalise the e-mails at a later convenient period of time.

With reference to figure 3, the sub-systems of an e-mail manager (EMM) according to the preferred embodiment of the invention are schematically described.

20

Data stores:

At the core of the EMM are the two data stores:

25

1. **EMM-DB.** This is the main data store. The EMM-DB contains all emails received from the ECA. The EMM-DB furthermore contains all metadata created by an application that uses the EMM.

2. **QUERY-DB.** This is the data store that contains the predefined and ad-hoc created **EMM** queries. Predefined queries could be Inbox simulation queries. Ad-hoc queries could be a request for all emails from/to a specific customer.
- 5 The two data stores can easily reside on the same physical server – and preferably in a SQL environment.

EMM Access Control (EAC):

- 10 The **EAC** is an environment specific security mechanism that grants/denies specific **EMM** users access to items in the **EMM-DB** and **QUERY-DB**. This will allow for protection of confidential information. In a Microsoft environment, the **EAC** will be an extension to Active Directory (AD).

15

EMM Capturing Agent (ECA):

- 20 The **ECA** is responsible for capturing emails from the email source and storing them in the **EMM-DB**. An email source could be a general purpose e-mail system such as Microsoft Exchange, Lotus Notes or Novell GroupWise. The email source could also be a direct SMTP (Simple Mail Transport Protocol) source.

25 EMM Meta Data Provider (EMP):

The **EMP** is an environment specific application that adds meta data to the emails in the **EMM-DB**.

30 EMM Query Builder (EOB):

The **EQB** is an environment specific application for creating predefined and ad-hoc queries.

5 Query Result Formatter (QRF):

The **QRF** is an environment specific application that displays the result of a query from the **QUERY-DB** against the **EMM-DB**. The **QRF** may display the result as a folder in the users email application (such as Microsoft Outlook), as a web page, as a data list in a spreadsheet, as an extension to an ERP system (such as Microsoft Navision), as an extension to a CRM system (such as Microsoft CRM), on a mobile device, etc.

Referring to figure 4, a notification record 52 including an e-mail 10 and a set of 15 associated metadata 54. This notification record 52 is stored in the EMM database 50. By the content of the metadata 54, the e-mail 10 is searchable and may be selected in a user-defined journal 62. A user-specified journal 62 may be established by defining a search query 70 including one or more search criteria 72, 74. The search criteria may be compared with any type of Boolean operator, e.g. "and", "or", 20 "and not".

A second journal 64 may be established by comparing two or more searches 62.1; 25 62.2 to form a new journal 64. In this manner, the dynamic search facilities allow the user to perform advanced searches for relevant e-mails in the EMM database.

The storage of e-mails in an EMM system according to the invention offers many advantages as described above. It is also realised that it is advantageous to provide a sufficiently large storage capacity so that no e-mails needs to be deleted due to lack of storage space in the central server in the organisation. The needed storage space is 30 also minimised as only one copy of an e-mail needs to be stored, even if it is sent to a

multiple of recipients. By not providing a delete function in the EMM system, a unique complete electronic mail documentation is provided for the organisation having an EMM system installed.

PATENT CLAIMS:

1. An electronic mail management (EMM) system for handling electronic mail in a multiple user environment, in which the user's incoming electronic mail is sent and received, said system includes a mail distribution network including a server through which electronic mail items of the users are exchanged, said system comprising:
 - 5 detecting means for monitoring the flow of in- and outbound electronic mails for a specified set of users, and intercepting the in- and outbound e-mails;
 - 10 journalising means for creating a notification record of a set of e-mail information data (metadata) for each intercepted electronic mail;
 - 15 an e-mail manager database (EMM DB) for storing at least said notification record and each electronic mail; and
 - 20 means for establishing a journal of e-mails by defining a search request query and submitting said search request to a search engine for selecting a user-defined series of information data from the notification records in the EMM database.
- 25 2. A system according to claim 1, wherein the detection means include means for formatting each intercepted electronic mail.
- 30 3. A system according to claim 2, wherein said formatted electronic mail is copied to the e-mail manager database (EMM DB).
- 35 4. A system according to any of claims 1 to 3, wherein EMM database is a relation database, preferably hosted on a SQL server.
- 40 5. A system according to any of claims 1 to 4, wherein the means for establishing a journal involves a search according to at least one selection criterion in the notification record for establishing a journal of e-mails amount the entries in the EMM database.

6. A system according to claim 5, wherein the data in the notification record includes a notification message for each e-mail, said notification message containing e-mail header information including at least one of the following data; time of receipt (date); information concerning the sender ("from"); information concerning the recipient(s) 5 (the "to"); information regarding copy recipients ("cc") and/or blind copy recipients ("bcc"); message identification; reference data, such as "in reply to"; subject; comments, and keywords.
7. A system according to any of claims 1 to 6, wherein the EMM is adapted to 10 cooperate with any SMTP protocol based e-mail systems.
8. A system according to any of claims 1 to 7, wherein the specified set of users being subjected to the detection means is all users in the multiple user environment is at least two users. 15
9. A system according to any of claims 1 to 8, wherein the multiple-user environment is a multi-site customer environment, each site having a local client server.
10. A system according to any of claims 1 to 9, wherein the multiple-user 20 environment is a single-site customer environment, having a single client server.
11. A system according to claim 1, wherein the means for establishing a journal include an e-mail management dialog means for each user for indicating arrival and departure of e-mails. 25
12. A system according to claim 11, wherein said dialog means provide for seeking consent for journalising for each arriving and departing e-mail.
13. A system according to claim 11, wherein said dialog means provide for automatic 30 journalising for each arriving and departing e-mail.

14. A system according to any of claims 1 to 13, wherein the e-mail journalising means includes:

- a notification queue
- 5 - a notification server
- a notification loader
- a notification scheduler
- the e-mail management data store.

10 15. A system according to claim 14, wherein the notification scheduler include means for updating the journalising means, said updating means include a predefined journalisable acceptance criterion.

15 16. A system according to claim 14, wherein said journalisable acceptance criterion being either if the specific e-mail is send to more users, all users must accept the specific e-mail to be journalised; or if only one of the users accepts the specific e-mail for journalising, the journalising is performed.

20 17. A system according to any of claims 1 to 16, wherein the means for establishing a journal of e-mails is adapted for providing a multiple of journals.

18. A system according to claim 17, where a journal may be established by manipulating two or more of said multiple of journals by Boolean operators.

25 19. A method of journalising electronic mail in a multiple user environment, in which the users incoming electronic mail are sent and received, said system includes a mail distribution network including a server through which electronic mail items of the users are exchanged, said method comprising:
30 monitoring the flow of in- and outbound electronic mails to and from the server users, and intercepting at least a selection of the in- and outbound e-mails,

creating a notification record of a set of e-mail information data (metadata) for each intercepted electronic mail, and storing said notification record in an e-mail manager database (EMM DB);

5 establishing a user-specific journal of e-mails by defining a search request query and submitting said search request to a search engine for selecting a user-defined series of information data from the notification records in the EMM database.

10 20. A method according to claim 19, including formatting each intercepted electronic mail.

21. A method according to claim 20, whereby said formatted electronic mail is copied to the e-mail manager database (EMM DB).

15 22. A method according to claim 19, wherein the step of establishing of a journal includes an e-mail management dialog means for each user for indicating arrival and departure of e-mails.

20 23. A method according to claim 22, wherein said dialog means provide for seeking consent for journalising for each arriving and departing e-mail.

24. A method according to claim 22, wherein said dialog means provide for automatic journalising for each arriving and departing e-mail.

25 25. A method according to claim 1 to 24, wherein the e-mail journalising step include updating the journalising means, said updating means include a predefined journalisable acceptance criterion.

30 26. A method according to claim 25, wherein said journalisable acceptance criterion is either if the specific e-mail is sent to more users, that all users must accept the

specific e-mail to be journalised; or if only one of the users accepts the specific e-mail for journalising, the journalising is performed.

27. A method according to claims 19 to 26, whereby the step of establishing of a
5 journal of e-mails is adapted for providing a multiple of journals.

28. A method according to claim 27, where a combined journal may be established by manipulating two or more of said multiple of journals by Boolean operators.

10 29. A computer usable medium having computer-readable program code means providing an e-mail management system for journalising electronic mail in a multiple-user environment, said computer-readable program code comprising:

15 computer program code means for providing detecting means for monitoring the flow of in- and outbound electronic mails for a specified set of users, and intercepting the in- and outbound e-mails;

computer program code means for providing journalising means for creating a notification record of a set of e-mail information data (metadata) for each intercepted electronic mail;

20 an e-mail manager database (EMM DB) for storing at least said notification record and each electronic mail; and

computer program code means for providing means for establishing a journal of e-mails by defining a search request query and submitting said search request to a search engine for selecting a user-defined series of information data from the notification records in the EMM database.

ABSTRACT:

The invention concerns an electronic mail management (EMM) system for handling electronic mail in a multiple user environment, in which the user's incoming 5 electronic mail is sent and received, said system includes a mail distribution network including a server through which electronic mail items of the users are exchanged, said system comprising: detecting means for monitoring the flow of in- and outbound electronic mails for a specified set of users, and intercepting the in- and outbound e-mails; journalising means for creating a notification record of a set of e-mail 10 information data (metadata) for each intercepted electronic mail; an e-mail manager database (EMM DB) for storing at least said notification record and each electronic mail; and means for establishing a journal of e-mails by defining a search request query and submitting said search request to a search engine for selecting a user-defined series of information data from the notification records in the EMM 15 database.

(Fig. 3)

1/3

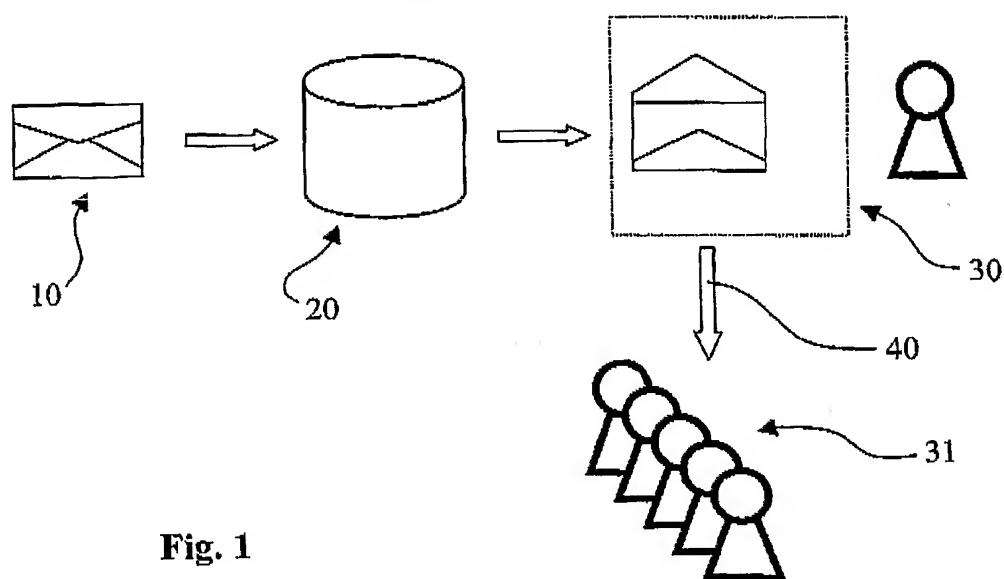
Prior Art

Fig. 1

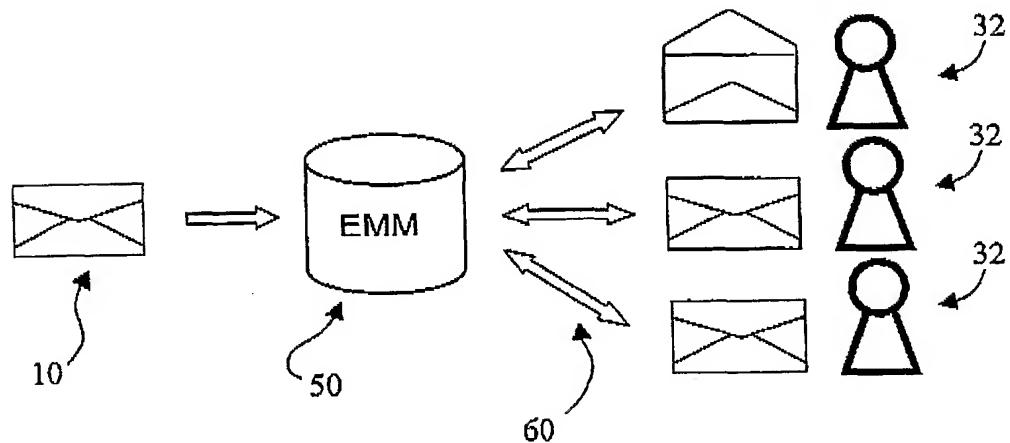


Fig. 2

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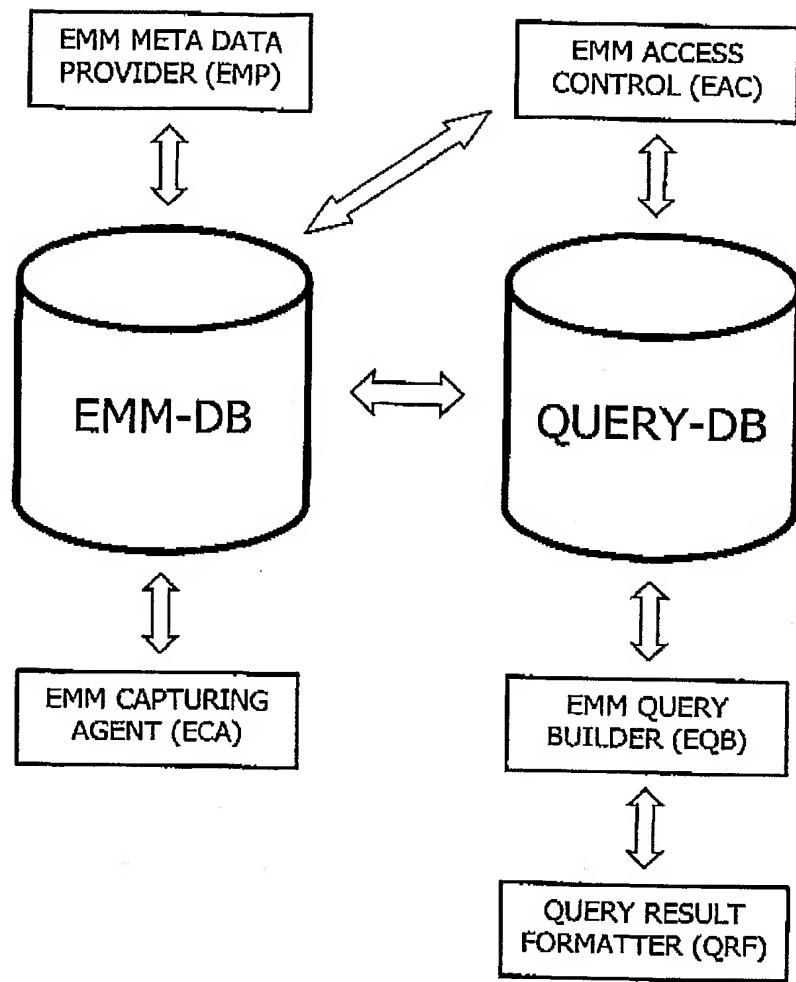
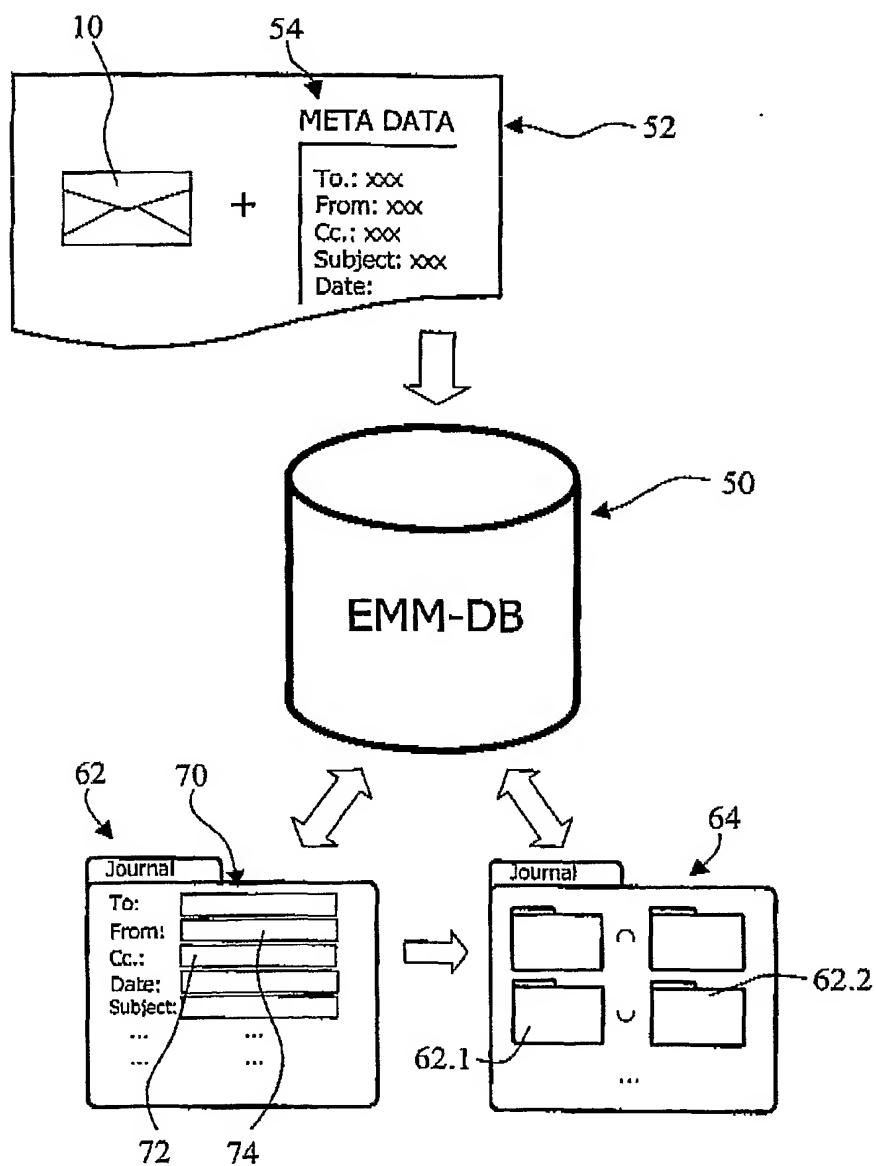


Fig. 3

3/3

**Fig. 4**